CHAPTER 2

GENERAL DISCUSSION

2.1.1 Importance of Periodic Inspections

The first step in the establishment of a proper roof maintenance program is the adoption of a periodic inspection system. The early discovery and correction of minor defects forestalls major repairs and materially extends the date when reroofing is necessary. Since a large proportion of early roof failures are flashing failures, the regular inspection of flashings is of vital importance. Regular inspections should be made by competent personnel at least once each year, and always in the spring. This time is best because it follows the severe winter conditions and is followed by the period best suited for roofing work. Inspections should be made even though a roof has been exposed for less than one year. The first yearly inspection is of great importance because it frequently discloses minor defects that were not apparent when the roofing or reroofing job was completed. Roof inspection records should be maintained and made a part of the historical records for each structure. The records should contain a survey and classification of all roof areas with entries indicating age and condition. These continuing records will be of considerable value in determining the roof treatment that may be necessary and in preparing an efficient scheduled roof maintenance program. Suggested forms for maintaining historical records and for use in inspections of built-up roofing and asphalt shingle roofing are shown in the appendix. Similar forms may be prepared for the other types of roofing.

2.1.2 Importance of Special Inspections

In addition to scheduled yearly inspections, on-the-roof inspections must be made —

(1) After exposure of the roofs to unusually severe weather conditions such as very strong winds, hail or long-continued rain.

(2) Immediately prior to preparation of projects for maintenance, repair, or reroofing. The individual(s) responsible for preparation of project documents and for contract supervision should personally get up on the roof to make this inspection and not rely on information received second hand from others. The condition of the membrane, insulation, and decking must be determined for built-up roofing. This will usually require the removal of samples of the roofing assembly for analysis and inspection. Convenient sizes are 4 inches wide by 36 inches long or 12 inches square extending down to the roof deck. The number and size of samples will be determined by the types of roofing being worked on and the need for information about the roof plies. The holes created by sample removal should be patched as soon as possible. The inspection should include an examination of the roof deck from the underside for evidence of leaks, deteriorated decking, structural cracks or movement, and other defects. Walls and parapets should be examined for cracking, deterioration, loose coping efflorescence, and evidence of entrance of water.

(3) To ascertain or verify the backlog of essential maintenance and repair.

2.1.3 Importance of Contract Inspection

The importance of competent inspection during initial roof construction or during reroofing to insure good workmanship and compliance with project specifications cannot be overemphasized. Most early roofing problems or failures are attributable to poor workmanship and failure to follow specifications. Inspection on government projects is particularly important since essentially all contracts are awarded on the basis of a low bid. The project design engineer or the facilities engineer most familiar with the type of roofing involved should be assigned the primary responsibility for ensuring that the roof system is installed in strict accordance with the specifications. Inspectors assigned to a roofing project should work under the guidance of the project design engineer. The project engineer should make sure that the inspector has become fully familiar with and understands the requirements of the contract. The inspector should maintain a log book containing pertinent entries concerning the project.

2.1.4 Maintenance

Maintenance is the recurrent, day to day, periodic, and scheduled work required to preserve and restore a facility to a useful condition. Roof maintenance is defined herein as the treatment given a roof prior to any actual failure. It may consist in the correction of minor defects in small areas, such as resurfacing bare spots in aggregate-surfaced built-up roofing; or it may involve treatment of the entire roof area, such as recoating smooth-surfaced built-up roofing. The importance of proper roof maintenance cannot be emphasized too strongly. With good maintenance, the useful life of the roof is extended many years and the cost per year for roofing is reduced. Some types of roofing require more maintenance than others, but every establishment should have a well trained roof maintenance crew of a size determined by the kinds of roofing and the roof areas involved. Further, the crew should be properly equipped to make required repairs. The equipment should include a bitumen kettle. Other equipment such as mechanical scrapers might be warranted if the volume of work is great.

2.1.5 Repairs

Repair is the restoration of a facility by overhaul, reprocessing, replacement of constituent parts or materials, and which cannot be corrected through maintenance as defined in paragraph 2.1.4. Roof repair, as distinguished from roof maintenance, is defined herein as the treatment given a roof following at least partial failure. Such repair may be minor involving small areas, such as the replacement of broken slate or tile, or it may be major involving the whole roof, such as the application of additional layers of felt over built-up roofing.

2.1.6 Reroofing

Every roof ultimately requires reroofing. While the main purpose of this manual is to serve as a guide for extending the useful life of roofs by proper maintenance and repair methods, of equal importance is the development of guide lines for determining the point at which maintenance and repair treatments become unsound economically and reroofing is required. Many factors enter into this determination. The more important are: age of roofing, unusual exposure conditions such as hail or strong winds, previous maintenance and repair or lack of these, and the current and possible future use of the structure. It is only by weighing all of the pertinent factors that a proper decision can be made. Reroofing is generally a replacement in kind. However, it is essential that reroofing include corrective action to remedy design or construction deficiencies if they exist. Also, advantage should be taken of improved materials, methods, and techniques.

2.1.7 Research on Roofing

Roofing systems and their components are continually being investigated under Government-sponsored research programs. Recent investigations into the performance of roofing have been sponsored jointly by the Army, Navy, and Air Force at the Building Research Division of the National Bureau of Standards. The investigations cover various roofing materials and systems as well as methods of application. Since much recent military construction has involved relatively flat roof decks, a considerable part of the research effort has been spent on the performance of built-up roof systems. A list of pertinent National Bureau of Standard's reports is contained in appendix D.